Defining an Automation Rule

This section covers the following topics:

First Steps

This section contains a full description of all items that can be specified for an Automation Rule.

An Automation Rule specifies how the system should react automatically on certain Events. An Event is a message which satisfies the conditions specified in an Event definition within the rule. The Automation Rule is defined by linking an Action to an Event.

There are simple and complex Automation Rules. A simple rule consists of an Event and the assigned Actions. A complex rule consists of an Event Tree with an initial or Root Event, dependent Non-Root Events and their assigned Actions. In a complex rule, Actions are not necessarily assigned to each Event of the tree.

Automation Rules are checked only for messages that fulfill the conditions of their **owner** range. This significantly improves Server performance. If an Automation Rule is activated, its dependent Non-Root Events are checked against all messages. For this reason, Non-Root Events **must not** fulfill the conditions of the **owner** range.

An Automation Rule is always linked to an Included Message Range of a Logical Console. This Included Message Range is the **owner** of the Root Event definition (see the Object Relationship Diagram for Environment and Automation in Section Concepts and Facilities).

To define an Automation Rule:

1. Select a Logical Console to which the Automation Rule is associated;
2. Select one of the Included Message Ranges of the Logical Console to be the owner of the Root Event;
3. Define further Events, dependent on the Root Event;
4. Define Symbols and Actions for Events.

Associate an Automation Rule to a Logical Console

Because an Automation Rule is always defined within a Logical Console, the first step in defining an Automation Rule is to select a Logical Console within which the rule is to be defined.

To select a logical console

- Place the cursor on the Automation option under the Administration heading on the Main Menu and press Enter.

The Select Logical Console window opens:

Main Menu: Automation Rule - Select Logical Console

```
 9:38:26              *** ENTIRE EVENT MANAGEMENT ***                14.06.96
Srv    *                        - Main Menu -


   Console Services                ------------------------------------------
                                   !       - Select Logical Console -       !
    1  Logical Console            !                                        !
    2  Server                     ! Sel Name     Aut                       !
                                   !     *_______ ___ ____________________  !
                                   ! **  ********  top of data  *********   !
   Administration                  ! __  Adabas                             !
                                   ! __  All                                !
    3  Environment                 ! __  Automate  X                        !
    4  Automation                  ! __  Availabl                           !
    5  Authorization               ! __  Common    X                        !
    6  Calendars                   ! __  Complete                           !
                                   ! __  Frozen                             !
    .  Exit                        ! __  Network                            !
    ?  Help                        ! __  Security                           !
    *  Commands                    ------------------------------------------


 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip                  Down                   Menu
```

This window lists all the Logical Consoles which have already been defined. In the field marked with an asterisk (*) under Name you can use an asterisk (*) as wildcard for the Consoles to be listed.

List Automation Rules

To ADD, COPY, DELETE, DISPLAY, MODIFY or RENAME an Automation Rule

- Place the cursor on the desired Console in the Select Logical Console window (above) and press Enter.

  The List Automation Rule screen appears:

List Automation Rule


```
09:43:37              *** ENTIRE EVENT MANAGEMENT ***               14.06.96
Console  Operator          - List Automation Rule -

Cmd Name                              A from  to     Ev Message   Job      Act
    *_________________________________ * _____ _____ __ *_______ *_______ ___
**  ***************************  top of data  ****************************
__  Dump-Datasets-full                 00:00 23:59   1 IEA994E             +..
__  IMS-Log-Dataset-full              X 00:00 23:59   1 DFS3258A           NAT
__  Set-Unit-Offline                  X 00:00 23:59   1 IEE794I            CMD
__  SMF-Data-Set-Archiving              00:00 23:59   1 IEE362A            JOB
__  SMF-Data-Set-Report                 00:00 23:59   1 IEE362A            JOB
**  ***************************  bottom of data  ***************************




 Command ===> _____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Add   Exit  Flip                  Down                    Menu
```

This screen lists all Automation Rules which have previously been defined for the Logical Console you have chosen. If you have not yet defined any Automation Rules for this Logical Console, the following message appears at the bottom of the screen:

```
No objects defined for Automation Rule.
```

Available Local Commands: List Automation Rule

Add	Down	Find	Locate	Rfind	Top

Available Line Commands: List Automation Rule

Line Command	Explanation
CO	Copy Automation Rule.
DE	Delete Automation Rule.
DI	Display Automation Rule.
MO	Modify Automation Rule.
RN	Rename Automation Rule.

Field Descriptions: List Automation Rule

You can use an asterisk (*) as wildcard for the list contents of the fields marked with an asterisk, below.

- **Console ***
  Name of the Logical Console you have chosen. You can display the Automation Rules for another Logical Console by entering the name of the Console here.
- **Cmd**
  In the command line preceding the rule you want to process, enter DI to display, MO to modify or DE to delete it. Press Enter.

- **Name ***
  Name of an Automation Rule already defined within the Logical Console.
- **A ***
  An **X** in this column following a rule name means that automation is active. If the field in this column following the rule name is blank, automation is not active. Enter an **X** in the field at the top directly below **A**, to list only rules with automation active. Enter an asterisk (*) in the field at the top, to list all rules. Leave the field blank to list only rules with automation not active. Press Enter after making your entry.
- **from**
  The rule is analyzed from this time.
- **to**
  The rule is analyzed until this time.
- **Ev**
  The number of Events defined in this rule, including the Root Event.
- **Message ***
  Message ID of the rule's Root Event. A plus sign (+) appears if more than one message ID defines the Root Event.
- **Job ***
  Name of first job in Root Event. A plus sign (+) appears if more than one job defines the Root Event.
- **Act**
  The type of the first Action assigned to the Root Event. A plus sign (+) appears if more than one Action defines the Root Event.

Add an Automation Rule

To ADD an Automation Rule

1. Press PF2 (Add) in the List Automation Rule screen.

   A selection window for Logical Consoles opens.

2. Select a Console with the cursor and press Enter.

   The Add Automation Rule screen appears:

   ## Add Automation Rule


```
 09:46:52              *** ENTIRE EVENT MANAGEMENT ***               14.06.96
 Console  Operator          - Add Automation Rule -

   Name ..... _____________________________________ created ...
 > Comment .. _____________________________________ modified ..

   Timeout .... ___ ___  Loop Criterion _        Active .... _
   Locktime ... ___ ___  Resumetime ... ___ ___  Calendar .. __________
   Representation                                Analyzed .. 00:00 to 00:00
     Color .... __  Prefix .. _ Attr .. _

 > Event Tree
     Name ..... _____________________________________
     Range .... _____________________________________
     Message .. _________
     Token .... _____________ Pos .. __ and  _____________ Pos .. __
     Job ...... _________  or  _________  or  _________  or  _________
     Format ... _
   > Symbol ... _________     Pos .. __
   > Action ...
NCL0644 Please enter name to add Automation Rule.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                        Menu
```

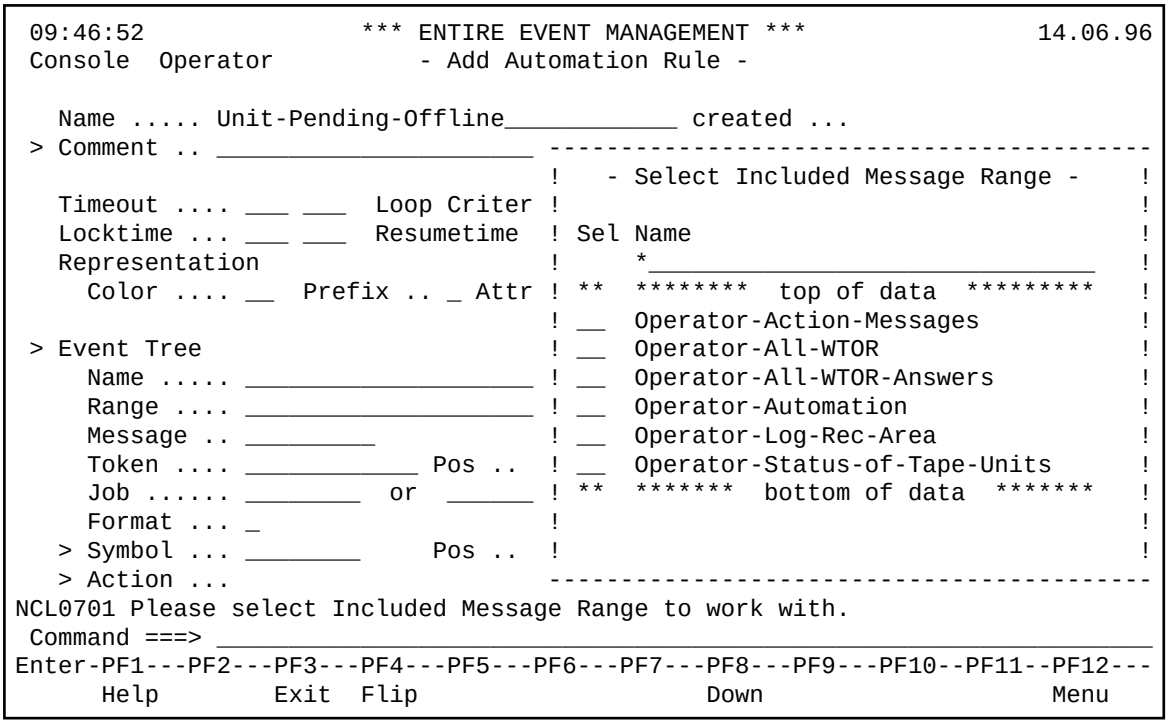
Available Local Commands: Add Automation Rule

+Action	+Comment	Do	+Event	+Symbol

3. Enter a name in the Name field and press Enter to begin defining the rule.

   If there is only one Included Message Range in the Logical Console, the range name is written to the Range field under Event Tree.
   If there is more than one Included Message Range in the Logical Console, the Select Included Message Range window opens:

Add Automation Rule - Select Included Message Range



Select the "Owner" of the Root Event

You must select one of the Included Message Ranges listed to be the owner (source) of the Root Event.

- Place the cursor on the desired range and press Enter.

  The Included Message Range you have selected is written to the Event Tree Range field. The name of the Automation Rule becomes the name of the Root Event and is written to the Event Tree Name field. You can optionally enter a different name.

  The message triggering the Event you define must satisfy the conditions set in the **owner** range.

Field Descriptions: Add Automation Rule

- **Console**
  The name of the Logical Console for which the Automation Rule is being defined.
- **Name**
  The name of the Automation Rule you are creating.
- **Timeout**
  Enter the number of seconds or minutes in the first three-character field. In the second three-character field enter MIN for minutes or SEC for seconds. The value you enter here sets a time limit for Events and Event Trees in the following way:

  This value sets the maximum time the automation process will wait for outstanding Events of the currently active Event Tree. This means that all dependent Events can only occur within this time limit.

  Whenever a message fulfills the conditions defined along with the Root Event of an Automation Rule, this Automation Rule becomes an active Event or, if there are dependent Events, an active Event Tree. After the Timeout has expired, the active Event or Event Tree is discarded.

It is best to estimate how often and for how long the rule can be active and enter the maximum value. This prevents uncontrolled execution of Actions, thus reducing load on the system.

Note:
The value you enter here overrides your entry in the **Rule Timeout** field of the Server, Automation Parameter definition (see the Rule Timeout field description in Section Defining the Physical Environment).

- **Locktime**
  Given an active Root Event, this specifies how long a new message with the same text and job ID as the active Root Event **cannot** trigger a new Root Event.

  Default: value entered in the Rule Locktime field of Server - Automation Parameters in Section Defining the Physical Environment). If no Rule Locktime is given in the Server Parameters, the Locktime will be the same as Rule Timeout. 999 MIN is interpreted as **no** Locktime.

- **Loop Criterion**
  This determines how message loops will be detected.
  - **1** = Loop is assumed when the same message text occurs *n* times within Rule Timeout even when issued by different jobs.
  - **2** = Loop is assumed only when the same message text is issued *n* times within Rule Timeout by the same job.

  Default: value entered in the Loop Criterion field of Server - Automation Parameters in Section Defining the Physical Environment. The threshold *n* is specified by the Server - Automation Parameters field Loop Frequency in Section Defining the Physical Environment.
- **Resumetime**
  When a looping Event is detected, the associated Automation Rule is disabled. Resumetime specifies after which time the Automation Rule is enabled again. Default: value entered in the Resumetime field of Server - Automation Parameters.

Representation

Enter representation parameters for all Events belonging to this Automation Rule in the Logical Console. These Events are displayed in the color and with the prefix and attribute you select. The parameters you set here override representation parameters you set for Automation Rules in the Logical Console Layout assigned to the Logical Console.

- **Color**
  Enter a question mark (?) in the two-character field and press Enter or place the cursor on the field and press PF1 to display the Color Help window with the following options:

BL = blue	GR = green	NE = neutral	PI = pink	RE = red	TU = turquoise	YE = yellow

  Place the cursor on a color and press Enter. The two-letter color code is written to the Color field.

- **Prefix**
  Enter a special character as a prefix to identify the rule.
- **Attr.**
  Enter a question mark (?) in the one-character field and press Enter or place the cursor on the field and press PF1 to display a Help window with the following options:

B = blinking	C = cursive/italic	D = default intensity	I = intensified	U = underlined	V = reverse video

  Place the cursor on an attribute and press Enter. The one-letter attribute code is written to the Attr field.

- **Active**
  If you leave this field blank, the Automation Rule is not used. Enter **X** to activate the rule.
- **Analyzed**
  This is the **activity period** of the Automation Rule. Enter the time period during which the Automation Rule becomes active (i.e. the Server begins to handle the rule). The default is from 00:00 to 23:59.
- **Calendar**
  You can enter the name of a Calendar here. In the Calendar, you can mark days on which the rule is set **inactive**. For more information, see Section Defining a Calendar.

  The activity period of the Automation Rule and the Calendars of the Logical Console and Automation Rule are combined by logical AND. This means that no Automation Rule of the Logical Console is executed outside of the activity period of the Logical Console.

Event Tree

The data displayed under this heading on the Add Automation Rule screen is for the Root Event. To add Events and create an Event Tree, you must ZOOM this option. For information on Event Trees and the ZOOM option, see the subsection Defining an Event Tree.

- **Name**
  This is the name of the Root Event. The name of the Automation Rule is automatically written here, when you enter the rule name in the Name field for the Automation Rule, above. You can change this name by simply typing in another name.
- **Range**
  The name of the **owner** Message Range of the Event. Every Root Event has an owner range which is an Included Message Range linked to the Logical Console. The conditions for the Event are checked only for messages which fulfill the conditions of the owner Message Range.
- **Message**
  Message ID of Event. You can use an asterisk (*) as wildcard (as for Message Ranges).
- **Token / Pos**
  Enter the message tokens and their position in the message. Tokens are alphanumeric strings separated by delimiters (defined in the Server Parameters) and identified by position. If the specified tokens appear in the message, the condition for the Event is true.

  When **position** is specified, the condition for the Event is true, if the token appears at this position in the message.

  When **no position** is specified, the condition for the Event is true, if the token appears at any position in the message.

  You can use an asterisk (*) as wildcard, when specifying tokens.

- **Job**
  You can restrict the Event to jobs specified here. The jobs are combined with logical OR. You can use an asterisk (*) as wildcard.
- **Format**
  The format determines how the Event is displayed in the Logical Console. Leave this field blank to **suppress** the message which triggered the Event or enter:
  - **1** to display the Event as a **break line**;
  - **2** to display the **message** which triggered the Event;
  - **3** to display a **box** containing the Event and all Actions triggered;

Symbol / Pos

A symbol extracts information contained in the analyzed message, and with this information, generates Actions and dependent Events.

To add, display, modify or delete a symbol

- You must ZOOM this option (see the subsection ZOOM Feature in Section Using Entire Event Management for an explanation of how to ZOOM).

  For further information on symbols, see the subsection Defining a Symbol for an Event.

Action

This is the Action assigned to the Event. Multiple Actions are possible.

To ADD, DISPLAY, MODIFY or DELETE an Action

1. You must ZOOM this option (see the subsection ZOOM Feature in Section Using Entire Event Management for an explanation of how to ZOOM).

   For further information on Actions, see the subsection Defining an Action for an Event.

2. When you have finished entering data for the new Automation Rule on this first screen, press PF5 (Do) or enter DO on the command line and press Enter.

   The following message confirms creation of the new Automation Rule:

   ```
   New Automation Rule (name) created.
   ```

Copy an Automation Rule

To COPY an Automation Rule

1. On the List Automation Rule screen, enter CO in the two-character command line preceding the rule you want to copy and press Enter.

   The Copy Automation Rule window opens.

2. Enter the target rule name in the field provided and press Enter. A message confirms that the rule has been copied.

   Note:
   You can copy an Automation Rule to another Console as long as the related Message Range is an Included Message Range in the target Console.

Delete an Automation Rule

To DELETE an Automation Rule

1. On the List Automation Rule screen, enter DE in the two-character command line preceding the rule you want to delete and press Enter. Depending on the confirmation level, you may be asked to confirm by entering **Y** (yes) or **N** (no) or by typing the rule name again.
2. Make the appropriate entry in the field provided and press Enter.

   A message confirms that the rule has been deleted.

   Note:
   If you delete an Automation Rule, all associated Events and Actions are also deleted.

Display an Automation Rule

To DISPLAY an Automation Rule

- On the List Automation Rule screen, enter DI in the two-character command line preceding the rule you want to display and press Enter.

  The Display Automation Rule screen appears.

  In DISPLAY mode you can only view the object parameters. You cannot enter data because all fields are protected.

Modify an Automation Rule

To MODIFY an Automation Rule

- On the List Automation Rule screen, enter MO in the two-character command line preceding the rule you want to modify and press Enter.

  The Modify Automation Rule screen appears.

  Proceed as described in the subsection Add an Automation Rule.

Rename an Automation Rule

To RENAME an Automation Rule

1. On the List Automation Rule screen, enter RN in the two-character command line preceding the rule you want to rename and press Enter.

   The Rename Automation Rule window opens.

2. Enter the new rule name in the field provided and press Enter.

   A message confirms that the rule has been renamed.

Defining an Event Tree

What Is an Event Tree and How Does It Work?

Events can be made inter-dependent by defining them in a so-called Event Tree. This is a kind of decision tree.

If a message satisfies the conditions set in the Event definition, then an Event **occurs**. The Event Tree is processed from the Root Event on the **lowest** level to dependent Events on a **higher** level. Events on a **lower** level must occur before Events on a **higher** level can occur. An Event is **dependent**, if it can occur only **after** another Event. Only those messages which are routed to the Logical Console within which the Automation Rule is defined can be dependent Events.

Any path in this tree is active, if each constituting Event has occurred. Only one path can be active within the time limit set in the **Timeout** field. When the timeout has expired, the active Event Tree is discarded. An Event Tree can have up to 9 levels.

For more information on the Timeout, see the field description for Timeout in the subsection Add an Automation Rule.

List Events and Actions

To ADD an Event to an Event Tree, to DISPLAY, MODIFY or DELETE an Event from an Event Tree, or to LIST the Events and related Actions of an Event Tree

1. ZOOM the Event Tree field on the Add Automation Rule screen (see the subsection ZOOM Feature in Section Using Entire Event Management for an explanation of how to ZOOM).

   This opens the Event Tree window, for example:

Add Automation Rule - Event Tree

```
15:45:11               *** ENTIRE EVENT MANAGEMENT ***               10.07.96
Console  Operator           - Add Automation Rule -

  Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
> Comment  ------------------------------------------------------------------
           !                          - Event Tree -                         !
  Timeout  ! Cmd Name                                    Message   Act      !
  Locktime !     ____________________________________ _________ ___ ___ !
  Represen ! **  **********************  top of data  ********************** !
    Color  ! __  1 Unit-Pending-Offline                                      !
           ! **  ********************  bottom of data  ********************* !
> Event Tr !                                                                !
    Name . !                                                                !
    Range  !                                                                !
    Messag !                                                                !
    Token  !                                                                !
    Job .. !                                                                !
    Format !                                                                !
  > Symbol !                                                                !
  > Action ------------------------------------------------------------------

 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Rfind             Down                    Menu
```

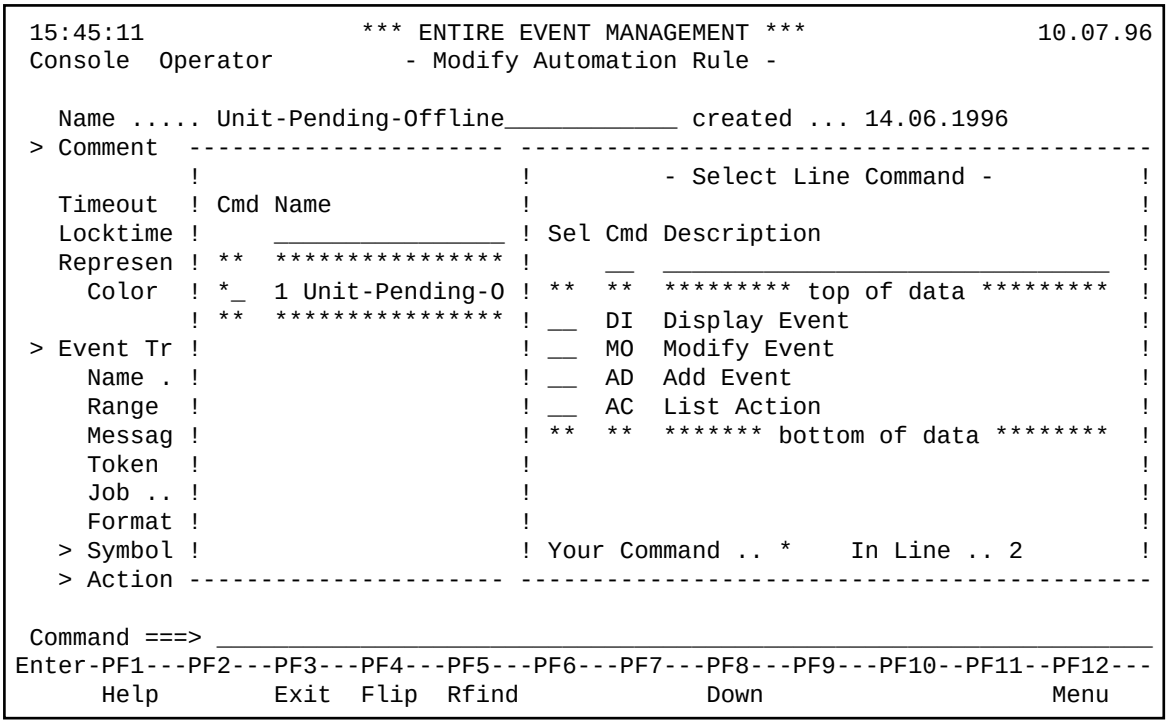
Available Local Commands: Add Automation Rule - Event Tree

Down	Find	Rfind	Top

2. Enter an asterisk (*) in the two-character command line preceding the Event which is to be the **owner** of the new Event.

   A Line Command Help window presents you with the following options:

Add Automation Rule - Event Tree - Select Line Command



Add an Event

To ADD an Event

1. Place the cursor on AD (Add Event) and press Enter.

   AD is written to the two-character command line preceding the **owner** Event.

2. Press Enter again.

   The Add Event window opens:

Add Automation Rule - Add Event


```
 15:45:11              *** ENTIRE EVENT MANAGEMENT ***               10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !               - Add Event for Automation Rule -                 !
   Timeout  !                                                                 !
   Locktime !   Name ..... ____________________________________ created       !
   Represen ! > Comment .. ____________________________________ modified      !
     Color  !                                                                 !
            !   Owner .... Event Unit-Pending-Offline                         !
 > Event Tr !   Message .. _________                                          !
     Name . !   Token .... _____________ Pos .. __ and  _____________ Pos .. __ !
     Range  !   Job ...... _________  or  _________  or  _________  or  _________ !
     Messag !   Format ... _                                                  !
     Token  !                                                                 !
     Job .. ! > Symbol ... _________     Pos .. __                            !
     Format ! > Action ...                                                    !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Event.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                       Menu
```

Available Local Commands: Add Event

+Action	+Comment	Do	+Symbol

3. Enter a name in the Name field and press Enter.

   The procedure for defining a new Event is the same as described for the Event Tree option.

Field Descriptions: Add Event

- **Owner**
  This is the name of the Event or Action which is the **owner** of the dependent Event to be added. If the owner is the Root Event, this is the name of the Included Message Range.
- **Token** and **Job**
  To define the Token and Job conditions for **dependent** Events, you can use all symbols which you have defined in the Event Symbol Tables of preceding Events as well as the predefined symbols &JOBNAME and &REPLYID.

  For more information on Symbols, see the subsection Defining a Symbol for an Event.
  For more information on Actions, see the subsection Defining an Action for an Event.

  For all other fields, see the Event Tree field description.

4. When you have finished entering data for the new Event, press PF5 (Do) or enter DO on the command line and press Enter.

   The following message confirms creation of the new Event:

```
New Event (name) created.
```

Display an Event

To DISPLAY an Event

- In the Event Tree window, enter DI in the two-character command line preceding the Event you want to display and press Enter.

  The Display Event for Automation Rule window opens.

  In DISPLAY mode you can only view the object parameters. You cannot enter data because all fields are protected.

Modify an Event

To MODIFY an Event

- In the Event Tree window, enter MO in the two-character command line preceding the Event you want to modify and press Enter.

  The Modify Event for Automation Rule window opens.

  Proceed as described in the subsection Add an Event.

Delete an Event

To DELETE an Event

1. In the Event Tree window, enter DE in the two-character command line preceding the Event you want to delete and press Enter. Depending on the confirmation level, you may be asked to confirm by entering **Y** (yes) or N (no) or by typing the Event name again.
2. Make the appropriate entry in the field provided and press Enter. A message confirms that the Event has been deleted.

   Note:
   The Root Event cannot be deleted. If you delete an Event, all associated Actions are deleted.

Defining a Symbol for an Event

A symbol extracts information from messages, and with this information, generates Actions and dependent Events. Symbols can also specify conditions for **dependent** Events.

A symbol consists of the **substitution character &** followed by a **keyword**. For example, if VOL is the keyword, then the symbol is &VOL.

The symbol is assigned a value from the message in one of two ways:

- **Position**
  If specified **with position**, the symbol is assigned the value of the message token in the specified position.
- **Keyword**
  If **no position** is specified, the **keyword** must appear in the message. The symbol is assigned the value of the message token that immediately follows the keyword.

To ADD, DISPLAY, MODIFY or DELETE a symbol for an Event

1. ZOOM the >Symbol option.

   The Event Symbol Table appears:

Add Automation Rule - Event Symbol Table

```
 15:45:11               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator          - Modify Automation Rule -

   Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                      - Event Symbol Table -                     !
   Timeout  !                                                                 !
   Locktime !                                                                 !
   Represen !               Symbol   from Pos     Symbol   from Pos           !
     Color  !               ________ ________     ________ ________          !
            !               ________    __        ________    __              !
 > Event Tr !               ________    __        ________    __              !
     Name . !               ________    __        ________    __              !
     Range  !               ________    __        ________    __              !
     Messag !               ________    __        ________    __              !
     Token  !                                                                 !
     Job .. !                                                                 !
     Format !                                                                 !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------

  Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                       Menu
```

Available Local Commands: Add Automation Rule - Event Symbol Table

Do

Field Descriptions: Event Symbol Table

- **Symbol**
  Here you can define up to 10 different symbols to derive their values from this Event and to be used in all Events dependent on this Event.

  Note:
  Enter only the keyword here. Do not enter the substitution symbol **&**.

  The following predefined symbols are always available and cannot be defined by the user:

Symbol	Explanation
TIME	The time when the related Event occurred.
CONSOLE	The Console in which the Event occurred.
JOBNAME	The name of the job which issued the message that is the Event.
JOBNR	The number of the job which issued the message that is the Event.
REPLYID	The reply ID assigned to the message that is the Event.
MSG	The whole message text.
NODE	The node number of the Server.

Note (naming convention):
The names of **user-defined symbols** may not contain special characters and may not begin with numbers. The names of the predefined symbols above may not be used.

- **from Pos** (optional)
  Enter the position of the message token in the message from which the symbol gets its value.

  Note:
  Either the **keyword** must appear in a message as a message token, or you must specify the **position** of the message token in the **from Pos** field.

2. Enter the symbols and their positions for this Event. When you have finished entering data, press PF5 (Do) or enter DO on the command line and press Enter.

   The following message confirms creation of the new table:


```
Modifications of Event Symbol Table saved.
```

Using Symbols

Symbols can be used in two ways:

- **to specify conditions for dependent Events:**

  If you want to ensure that all Events of the tree are generated by the same job, use the symbol &JOBNAME and specify it in the Job field of all dependent Event definitions.

  The Server uses this information as follows:

  After the Root Event has occurred, the Server assigns to the symbol &JOBNAME, the name of the job which issues the message that is the Root Event. Instead of using the value in the Job field of the Event definition directly, the value of the symbol &JOBNAME is used and matched against the job name of incoming messages.

  The Event can only occur if the job name is identical to the current value contained in the symbol &JOBNAME (i.e., if it is identical to the job name in the Root Event).

- **to generate Actions:**

  If an Action is defined with a symbol and if a message satisfies conditions for an Event, a dataset name or a terminal ID, for example, can be extracted from the message and inserted into the Action. The symbol in the Action is assigned a value from the message.

  For example, to automate the archiving of SMF datasets, a job is submitted when the message IEE362A SMF ENTER DUMP FOR SYS1.MANn ON volume appears. Symbols extract the dataset name from the message to archive the correct SMF dataset using either:

  Keyword:
  You can extract the dataset name by using the symbol &FOR. In this case, the value after the message token FOR, SYS1.MANn, is assigned to the symbol.

  Position:
  If you specify the position of the message token in the message (in the message above, Position 6), you can use an arbitrary symbol, for example, &DSN. The value of the message token in the 6th position, SYS1.MANn, is assigned to the symbol. For further details on this example, see the subsection JOB - Submit Job.

  Note:
  Sometimes a symbol cannot be assigned the message value because:

  - the specified position is greater than the number of tokens in the message or
  - the symbol does not appear in the message.
    In this case, the current Event does not occur, associated Actions are not executed and an error message is routed to the (Log*nnn*) Console.

Defining an Action for an Event

- **Root Event**
  To ADD, DISPLAY, MODIFY or DELETE an Action for the Root Event (the Event shown on the Add Automation Rule screen), ZOOM the >Action field on the Add Automation Rule screen.
- **Dependent Event**
  To ADD, DISPLAY, MODIFY or DELETE an Action for dependent Events (Events listed in the Event Tree window after the Root Event):
  - in the Add/Display/Modify Event window, ZOOM the >Action field or
  - in the Event Tree window, enter the AC line command in the Cmd field preceding the appropriate Event

and press Enter.

The List Action for Event window opens:

Add Automation Rule - List Action for Event

```
 16:25:14              *** ENTIRE EVENT MANAGEMENT ***               10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                    - List Action for Event -                    !
   Timeout  ! Cmd Type Name                                Server Execution     !
   Locktime !     ____ _____________________________ ______ _____________     !
   Represen ! **  **********************  top of data  ********************** !
     Color  ! **  **********************  bottom of data  ********************* !
            !                                                                  !
 > Event Tr !                                                                  !
     Name . !                                                                  !
     Range  !                                                                  !
     Messag !                                                                  !
     Token  !                                                                  !
     Job .. !                                                                  !
     Format !                                                                  !
   > Symbol !                                                                  !
   > Action ------------------------------------------------------------------
NCL0642 No Action defined for Event.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Add   Exit  Flip  Rfind             Down                    Menu
```

Available Local Commands: Add Automation Rule - List Action for Event

Add	Down	File	Rfind	Top

If this is the first time you have entered an Action for this Event, the list will be empty and the following message will be displayed:

```
No Action defined for Event.
```

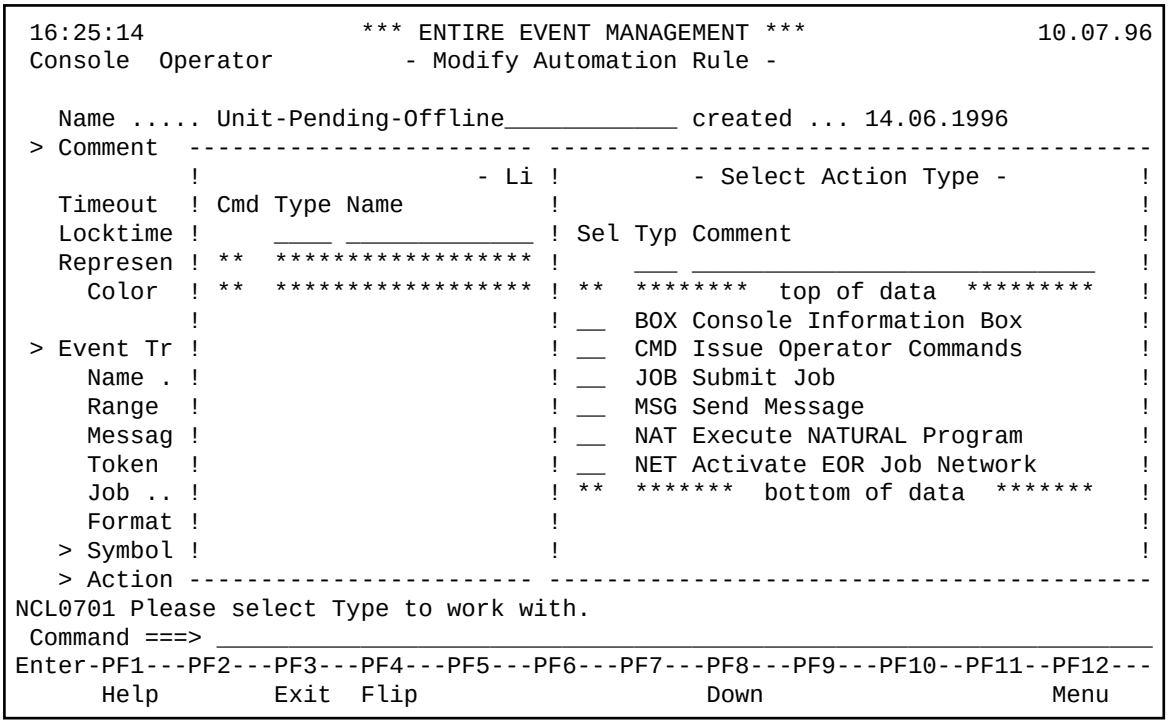
Add an Action to an Event

To ADD an Action

1. Press PF2 (Add).

   The Select Action Type window opens:

   List Action for Event - Select Action Type



Available Local Commands: List Action for Event - Select Action Type

Down	Locate	Top

2. Place the cursor on an Action type and press Enter.

   The Add Action window opens for the Action type you selected.

BOX - Console Information Box

When you select the Action type, BOX, the following window opens:

Add Action - BOX

```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                     - Add Action for Event -                    !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... BOX Console Information Box     Execution         !
            !                                               Server ... ___     !
 > Event Tr !   Contents                                                      !
     Name . !   ____________________________________________________________ !
     Range  !   ____________________________________________________________ !
     Messag !   ____________________________________________________________ !
     Token  !   ____________________________________________________________ !
     Job .. !   ____________________________________________________________ !
     Format !   ____________________________________________________________ !
   > Symbol !   ____________________________________________________________ !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                      Menu
```

Available Local Commands: Add Action - BOX

+Comment	Do

Field Descriptions: Add Action - BOX

- **Contents**
  Enter a text to be displayed in a box in the Logical Console after the message that triggered the Event. You can use the symbols defined in the Event Symbol Table of this Event or of a preceding Event.

Execution

- **Server**
  If this Action is to be executed by another Server, enter the node number of that Server. If this Action is to be executed by the same Server, leave this field blank.

  Note:
  If Action requests are to be forwarded to a remote Server during runtime, the remote Server must be running with the same NCLSYSF2 environment and the ESYUSER of the current Server must be defined in the external security environment of the remote Server (see also the SAT parameters SERVSYSF and ESYUSER in Section Installation and Customization - Mainframe).

CMD - Issue Operator Commands

When you select the Action type, CMD, the following window opens:

Add Action - CMD


```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline___________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                    - Add Action for Event -                     !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... CMD Issue Operator Commands     Execution         !
            !                                               Server .. ___      !
 > Event Tr !   Operator Command                            Delay ... ___ ___ !
     Name . !                                                                 !
     Range  !   ____________________________________________________________  !
     Messag !   ____________________________________________________________  !
     Token  !   ____________________________________________________________  !
     Job .. !                                                                 !
     Format !   (Please enter Operator Command above as free flowing text)    !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                      Menu
```

Available Local Commands: Add Action - CMD

+Comment	Do

Field Descriptions: Add Action - CMD

- **Operator Command**
  Enter the operator command, which is issued to the appropriate operating system when the Action is executed. You can use the predefined symbols or the symbols defined in the Event Symbol Table of this Event or of a preceding Event.

Execution

- **Server**
  Enter the number of the Server that is to execute the Action (see the field description Server under the heading Field Descriptions: Add Action - BOX).
- **Delay ___ ___**
  Enter the time of the delay between the arrival of the triggering Event and the execution of the Action.

Example: Automatic Response to "Pending OFFLINE" Message

In OS/390, a unit is not really set off-line when the VARY offline command, V nnn,OFFLINE, is issued. Instead, the unit goes into the **pending off-line** state. The operating system message IEE794I nnn Pending OFFLINE reports this situation. In most OS/390 installations, the operator must enter an S DEALLOC command. This executes the IEFBR14 dummy program that causes the unit to actually go off-line.

To automate this operator response

- Define message IEE794I as an Event which triggers a CMD Action that issues the S DEALLOC command.

JOB - Submit Job

The job skeleton for the job to submit can be defined with the predefined symbols or the symbols defined in the Event Symbol Table of this Event or of a preceding Event (see the subsection Defining a Symbol for an Event). When the Action is executed, the job is generated by replacing the symbols in the job skeleton with their current values.

When you select the Action type, JOB, the following window opens:

Add Action - JOB

```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator          - Modify Automation Rule -

   Name ..... Unit-Pending-Offline___________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                     - Add Action for Event -                    !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... JOB Submit Job                 Execution           !
            !                                              Server .. ___       !
 > Event Tr !   Node ..... ___                             Delay ... ___ ___   !
     Name . !   Dataset .. ____________________________________________________ !
     Range  !   Member ... ____________________________________________________ !
     Messag !   Volume ... ______                                              !
     Token  !   Escape ... _                                                   !
     Job .. !                        VSE only Attributes                       !
     Format !   Library .. ________          Member Type ... ________          !
   > Symbol !   Sublib ... ________          VSAM Catalog .. ________          !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                        Menu
```

Available Local Commands: Add Action - JOB

+Comment	Do

Field Descriptions: Add Action - JOB

- **Node**
  Enter the Entire System Server Node number with which the defining JCL can be accessed.
- **Dataset**
  Enter the dataset where the defining JCL resides.
- **Member**
  Enter the member where the defining JCL resides.
- **Volume**
  Enter the volume where the defining JCL resides.
- **Escape**
  If the escape character **&** is already used in the job skeleton, you can enter a different character here.

Execution

- **Server**
  Enter the number of the Server that is to execute the Action (see the field description Server under the heading Field Descriptions: Add Action - BOX).
- **Delay ___ ___**
  Enter the time of the delay between the arrival of the triggering Event and the execution of the Action.

VSE/ESA only Attributes

- **Library**
  Enter the library where the JCL resides.
- **Sublib**
  Enter the sublibrary where the JCL resides.
- **Member Type**
  Enter the type of member where the JCL resides.
- **VSAM Catalog**
  Enter the VSAM catalog where the JCL resides.

Example: Automate the Archiving of SMF Datasets in OS/390

In OS/390, the system records its activity in SMF datasets. The system switches automatically to the next SMF dataset, if an overflow occurs. The switch is reported by the message:

```
IEE362A SMF ENTER DUMP FOR SYS1.MANn ON volume
```

To automate the archiving of the full SMF dataset

1. Define an Automation Rule with the message IEE362A as an Event and extract the dataset name with the symbol definition, &DSN at position 6.
2. Assign an Action of the JOB type and specify the location of the following job skeleton:

```
//NCLSMF   JOB  (,,,99),'NCL',NOTIFY=NCL,REGION=6M,
//         CLASS=G,MSGLEVEL=(1,1),MSGCLASS=0
//MAN      EXEC PGM=IFASMFDP
//DUMPOUT  DD   DISP=(MOD,KEEP),DSN=SMFDUMP.DATA(0)
//DUMPIN   DD   DISP=SHR,DSN=&DSN
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
  INDD(DUMPIN,OPTIONS(DUMP))
  OUTDD(DUMPOUT,TYPE(000:255))
```

Before issuing the job to the internal reader, Entire Event Management replaces the symbol, &DSN with the current value extracted from the message IEE362A. In this way, the JCL is generated dynamically and the correct dataset is dumped to the generation dataset SMFDUMP.DATA(0).

MSG - Send Message to User, to System Console or to Logical Console

With this option, you define an Action which sends a message to a TSO, COM-PLETE or TIAM user, to a Logical Console or to a system console. The message is sent when the appropriate Event occurs.

When you select the Action type, MSG, the following window opens:

Add Action - MSG

```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                     - Add Action for Event -                    !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... MSG Send Message               Execution           !
            !                                              Server .. ___       !
 > Event Tr !                                              Delay ... ___ ___   !
     Name . !   Text                                                          !
     Range  !   ____________________________________________________________ !
     Messag !   Receivers                                                     !
     Token  !   User ........... ________ ________ ________                   !
     Job .. !   Log. Console ... ________ ________ ________                   !
     Format !   System Console . ___      ___      ___                        !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                      Menu
```

Available Local Commands: Add Action - MSG

+Comment	Do

Field Descriptions: Add Action - MSG

- **Text**
  Enter the text of the message to be sent. You can use the predefined symbols. You can also use the symbols defined in the Event Symbol Table of this Event or of a preceding Event.

Receivers

Specify the destination of the message text.

- **User**
  Depending on your TP system (TSO, COM-PLETE or TIAM), enter the IDs of up to three users to receive the message. The user must be logged on to the TP system of the machine on which the Server is running. You can use the predefined symbols or the symbols defined in the Event Symbol Table of this Event or of a preceding Event.
- **Logical Console**
  Enter the name of the Logical Console to which the message is routed.
- **System Console**
  Enter the node numbers of up to three machines to whose system consoles the message is sent.

Execution

- **Server**
  Enter the number of the Server that is to execute the Action (see the field description Server under the heading Field Descriptions: Add Action - BOX).
- **Delay ___ ___**
  Enter the time of the delay between the arrival of the triggering Event and the execution of the Action.

NAT - Execute Natural Program

With this option, you can specify the program location of a Natural program, which is to be executed as an Action. If the Action is triggered, the program is executed asynchronously in a user-action subtask.

When you select the Action type, NAT, the following window opens:

Add Action - NAT

```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline_____________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                     - Add Action for Event -                    !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... NAT Execute NATURAL Program     Execution         !
            !                                               Server .. ___      !
 > Event Tr !   Program Location                            Delay ... ___ ___ !
     Name . !                                                                 !
     Range  !     Member ....... ________                                     !
     Messag !     Library ...... ________                                     !
     Token  !     Database Nr .. ___                                          !
     Job .. !     File Nr ...... ___                                          !
     Format !                                                                 !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                      Menu
```

Available Local Commands: Add Action - NAT

+Comment	Do

Field Descriptions: Add Action - NAT

Program Location

If the fields under this heading are left blank, the Server's Action Program Library (default) is used instead, but you must specify a member. For more information, see Action Program Library.

- **Member** (must be specified)
  Enter the member of the database in which the Natural program to be executed is stored.
- **Library** (optional)
  Enter the library of the database in which the Natural program to be executed is stored.
- **Database Nr** (optional)
  Enter the ID of the database in which the Natural program to be executed is stored. If you enter a database ID here, you must also enter a file number and library, below.
- **File Nr** (optional)
  Enter the file number within the database in which the Natural program to be executed is stored. If you enter a file number, you must also enter a database ID, above.

Notes:

1. If **Database Nr** and **File Nr** are left blank, these are taken from the Action Program Library of the Server Parameters.
2. If **Library** is left blank, the whole Program Location pointer (except **Member**) is taken from the Action Program Library.

Execution

- **Server**
  Enter the number of the Server that is to execute the Action (see the field description Server under the heading Field Descriptions: Add Action - BOX).
- **Delay ___ ___**
  Enter the time of the delay between the arrival of the triggering Event and the execution of the Action.

The Natural program which is to be executed as an Action must observe the following conventions:

1. The predefined symbols listed below must be defined as variables with format and length as follows:

Symbol	Format	Explanation
#DATE	(D)	Date when the related Event occurred.
#TIME	(T)	Time when the related Event occurred.
#CONSOLE	(A8)	Name of the Logical Console where the Event occurred.
#NODE	(N3)	Entire System Server Node where the Action is executed.
#MSG	(A180)	Message which triggered the Action.
#JOBNAME	(A8)	Name of the job which caused the Event.
#JOBNR	(A8)	Number of the job which caused the Event.
#REPLYID	(A8)	ID, if the message requires operator intervention.

2. All user-defined symbols must be defined as alphanumeric variables with a length defined so that the token extracted from the message can be assigned in full length to the variable. Otherwise, a NAT1106 error message appears in the Action Task. The names of the user-defined symbols as defined in the Symbol Table associated with the Event definition must be preceded by the special character **#** in this Natural program.
3. The first statement in the Natural program must be an input statement with all variables under (1), above. The second statement must be an input statement with all the variables under (2), above.
4. Do not use the RELEASE STACK statement. When the user program takes control, a further program is on top of the stack. This program must take control after the user program is finished. It logs the successful execution of the user program in the appropriate Console.

Example:

The following program, EXNAT__P, demonstrates the interface between user-written programs and Entire Event Management. The EXNAT__P program is in the SYSNCLSV library.


```
0010 * Example of simple user written NATURAL Program Action
0020 *
0030 DEFINE DATA LOCAL
0040 * ------------------------------------------------------------------------
0050 * define all predefined symbols as variables:
0060 1 #DATE    (D)   /* date when the related event occurred
0070 1 #TIME    (T)   /* time when the related event occurred
0080 1 #CONSOLE (A8)  /* name of logical console where this action is defined
0090 1 #NODE    (N3)  /* Entire System Server Node where action is performed
0100 1 #MSG     (A180)/* message which triggered this action
0110 1 #JOBNAME (A8)  /* name of the job which caused the event
0120 1 #JOBNR   (A8)  /* number of the job which caused the event
0130 1 #REPLYID (A8)  /* replyid if the message requires operator reply
0140 * ------------------------------------------------------------------------
0150 * define all user defined symbols as variables:
0160 * ------------------------------------------------------------------------
0170 1 #V1      (A128)
0180 1 #V2      (A128)
0190 1 #V3      (A128)
0200 * ------------------------------------------------------------------------
0210 * other variables:
0220 * ------------------------------------------------------------------------
0230 1 #MESSAGE (A60)
0240
0250
0260
0270 1 SEND-MESSAGE VIEW OF SEND-MESSAGE
0280   2 ERROR-CODE   (N3)
0290   2 NODE         (N3)
0300   2 DESTINATION  (A8)
0310   2 MESSAGE      (A79)
0320 END-DEFINE
0330 FORMAT LS=250
0340 * ------------------------------------------------------------------------
0350 * interface
0360 * ------------------------------------------------------------------------
0370 INPUT  #DATE #TIME #CONSOLE #NODE #MSG         /* all ..
0380         #JOBNAME #JOBNR #REPLYID                      .. system symbols
0390 INPUT  #V1 #V2 #V3                            /* all user symbols
0400
0410 * ------------------------------------------------------------------------
0420 * main line
0430 * ------------------------------------------------------------------------
0440 COMPRESS 'HELLO' #V1 #V2 'HOW ARE YOU' #V3 INTO #MESSAGE
0450 PROCESS SEND-MESSAGE USING NODE        = #NODE
0460                       ,     DESTINATION = #V1
0470                       ,     MESSAGE     = #MESSAGE
0480                     GIVING ERROR-CODE
0490 END
```

NET - Activate Entire Operations Job Network

This option allows you to specify an Action which starts a job network, when triggered by an Event, or a single job defined in Entire Operations. The Action causes an activation request for the specified job network to be scheduled to Entire Operations.

When you select the Action type, NET, the following window opens:

Add Action - NET

```
 16:25:14               *** ENTIRE EVENT MANAGEMENT ***                10.07.96
 Console  Operator         - Modify Automation Rule -

   Name ..... Unit-Pending-Offline___________ created ... 14.06.1996
 > Comment  ------------------------------------------------------------------
            !                     - Add Action for Event -                    !
   Timeout  !   Name ..... ____________________________________ created       !
   Locktime ! > Comment .. ____________________________________ modified      !
   Represen !                                                                 !
     Color  !   Type ..... NET Activate EOR Job Network    Execution         !
            !                                               Server .. ___      !
 > Event Tr !   Job Network Defnition                       Delay ... ___ ___  !
     Name . !                                                                 !
     Range  !   Owner Name ...... __________                                  !
     Messag !   Job Network ..... __________                                  !
     Token  !   Jobname ......... __________                                  !
     Job .. !                                                                 !
     Format !                                                                 !
   > Symbol !                                                                 !
   > Action ------------------------------------------------------------------
NCL0644 Please enter name to add Action.
 Command ===> ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  Flip  Do                                      Menu
```

Available Local Commands: Add Action - NAT

+Comment	Do

Field Descriptions: Add Action - NET

Job Network Definition

- **Owner Name**
  You **must** enter an owner name and you **must** define this owner name in Entire Operations. The owner name is a group name for job networks.
- **Job Network**
  You **must** enter a job network name and you **must** define this name in Entire Operations.
- **Jobname**
  If you enter a job name here, you **must** define the job name in Entire Operations. This causes the job with this name in the specified network to be executed. If you leave this field blank, the whole network will be activated.

For further information on job network definition, please refer to the Entire Operations Reference Documentation.

Execution

- **Server**
  Enter the number of the Server that is to execute the Action (see the field description Server under the heading Field Descriptions: Add Action - BOX).
- **Delay ___ ___**
  Enter the time of the delay between the arrival of the triggering Event and the execution of the Action.

When you have finished entering data for the new Action, press PF5 (Do) or enter DO on the command line and press Enter.

The following message confirms creation of the new Action:


```
New Action (name) created.
```

Display an Action

To display an Action

- In the List Action for Event window, enter DI in the two-character command line preceding the Action you want to display and press Enter.

  The Display Action for Event window opens.

  In DISPLAY mode you can only view the object parameters. You cannot enter data because all fields are protected.

Modify an Action

To modify an Action

- In the List Action for Event window, enter MO in the two-character command line preceding the Action you want to modify and press Enter.

  The Modify Action for Event window opens.

  Proceed as described in the subsection Add an Action to an Event.

Delete an Action

To delete an Action

1. In the List Action for Event window, enter DE in the two-character command line preceding the Action you want to delete and press Enter. Depending on the confirmation level, you may be asked to confirm by entering **Y** (yes) or **N** (no) or by typing the Action name again.
2. Make the appropriate entry in the field provided and press Enter.

   A message confirms that the Action has been deleted.

